

**UNITED STATES DEPARTMENT OF COMMERCE****United States Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/075,666	05/11/98	KONDO	T 450100-2780.

020999  
FROMMER LAWRENCE & HAUG  
745 FIFTH AVENUE- 10TH FL.  
NEW YORK NY 10151

WM31/0727

EXAMINER

CHANG, J

ART UNIT	PAPER NUMBER
----------	--------------

2623

DATE MAILED:

07/27/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**Office Action Summary**

Application No.

09/075,666

Applicant(s)

KONDO, TETSUJIRO

Examiner

Jon Chang

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 March 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 is/are allowed.
- 6) ☒ Claim(s) 15-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Response to Amendment and Arguments***

1. The amendment filed March 27, 2001, has been entered and made of record.

The Examiner notes that claim 33, as amended, no longer has the language "based upon said retrieved class data" at the end of the claim. This may have been inadvertently omitted.

Applicant's arguments with respect to Kanno et al. have been fully considered. With respect to the examiner's first interpretation of Kanno et al. (see page 4 of the last Office Action, paper no. 10), Applicants' arguments are persuasive in view of the amendment. Therefore, the rejection of claims 15, 19, 22, 33, 35-36 and 38 under 35 U.S.C. § 102(e) as being anticipated by Kanno et al., the rejection of claims 17 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Kanno et al., the rejection of claims 18, 23, 25, 26, 27, 30, and 32 under 35 U.S.C. § 103(a) as being unpatentable over Kanno et al. and further in view of Collins, the rejection of claims 16, 20, 34 and 37 under 35 U.S.C. § 103(a) as being unpatentable over Kanno et al. and further in view of Tararine et al. , and the rejection of claims 24, 28, 29 and 31 under 35 U.S.C. § 103(a) as being unpatentable over Kanno et al. and Collins, and further in view of Tararine et al., are all expressly withdrawn.

Applicant's arguments with regard to Matsumura have been fully considered, but they are not persuasive for at least the following reasons.

Applicant argues that Matsumura has no teaching of increasing the resolution of an image, therefore Matsumura teaches away from the interpolation of pixels for the

purpose of increasing or creating resolution. The Examiner provides the following response.

First, it is noted that none of the claims require increasing or "creating" resolution. This is clearly evident in claim 30, for example. Even other claims, such as claim 15, do not require this. Claim 15 recites in the preamble, "converting a first digital image signal to a second digital image signal having a high resolution component." This limitation only specifies that 1) a first digital image signal is converted to a second digital image signal, and 2) that the second digital image signal has a high resolution component. Nothing is said of increasing or creating resolution. The claim would encompass first digital image signals with lower, higher or the same resolution. Since the features of increasing or creating resolution are not claimed, it is irrelevant as to whether Matsumura teaches this feature or not.

Second, Applicant's argument is *non sequitur*. In other words, even if, for the sake of argument, Matsumura did not teach the increasing or creating of resolution, it does not logically follow that Matsumura "teaches away" from this feature. In this hypothetical situation, the most one could say is that Matsumura is silent with regard to this feature.

Third, Applicant is incorrect. Matsumura clearly teaches increasing resolution. Note that the resolution of the image signal in Fig.2B is increased (i.e., higher) over the resolution of the image signal in Fig.2A. Both Kanno and Matsumura are concerned with increasing resolution using interpolation.

Based on the above, the rejections relying on Matsumura are considered proper and will be maintained.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15, 17, 19, 21, 22, 33, 35-36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) in view of Matsumura (US 5,148,499).

As to claims 15 and 33, Kanno discloses a digital signal conversion apparatus (figures 1 and 4) which includes:

- a memory for storing class data for respective classes at addresses associated with at least a training digital image signal (figure 11, items 3 and 9). The training image signal has a high resolution component (see column 1, lines 35-45);

- means for receiving first digital image signal including pixel data (figure 11, item 4);

- means for clustering (figure 12, item 19 clusters input signal into a class designated by r1-r16) pixel data in accordance with adjacent pixel data of the second digital image signal (e.g., r6 and r7 are adjacent to h1) to produce a class;

-means for retrieving class data from one of the addresses of the memory corresponding to the class of the first digital image signal (the class r1-r16 is used to address the memory to retrieve the class data h1-h3; figure 3); and

-means for generating pixel data representing pixel values of the second digital image signal based upon at least the retrieved class data (figures 1 or 11, item 7). See column 4, lines 32-41.

With regard to "generating all pixel data," Kanno generates all data since the interpolation circuit, as shown for example in Fig.4 does "generate" all of the pixel data representing pixel values of the second digital image by producing (i.e., generating) the pixel data at the terminal 15. Kanno does not explicitly teach generating all of pixel data "in the same manner in accordance with a common algorithm" as claimed. However, this is extremely old and well known in the art. For example, Matsumura teaches this (see for example, Fig.2B, and column 4, lines 27-32). As explained in Matsumura, the technique provides the advantage of preventing image deterioration (e.g., column 2, lines 51-57). Therefore, it would have been obvious to one of ordinary skill in the art to modify Kanno according to Matsumura in order to obtain this advantage.

Claims 19 and 36 recite a method which generally corresponds to the apparatus of claims 15 and 19 and are rejected on the same grounds.

As to claims 22, 35 and 38, Kanno teaches that the class data stored in memory corresponds to pixel data representing the second standard (i.e., higher resolution; see figure 2, h1-h3) and the means for generating generates pixel data representing the

second image signal by providing the retrieved class data as pixel data representing pixel values. See column 4, lines 38-41.

With regard to claims 17 and 21, Kanno does not teach the use of an orthogonal decoding to provide the input digital signal. Kanno does teach that the image processing system is intended to be used with facsimile communication (column 1, lines 1-25). It is common in the art to transmit facsimile digital signals using orthogonal coding (the Examiner takes official notice of this fact). It would have been obvious to one of ordinary skill in the art, to include an orthogonal decoder in the image input device because Kanno et al. teaches that the system is to be used in the facsimile environment which commonly includes such encoding of digital signals.

4. Claims 18, 23, 25, 26, 27, 30, 32, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) and Matsumura (US 5,148,499), and further in view of Collins (US 4,587,556).

To the extent that these claims mirror the language of claims 15, 19, 33 and 36 above, Kanno applies as already discussed above.

As to claims 23, 27 and 30, Kanno does not specifically deal with standard and high definition *video* signals. However, conversion from a standard (i.e., lower) definition video signal standard (i.e., NTSC at 525 lines/field) to a higher definition video signal standard (i.e., PAL at 625 lines/field) is well known in the art. Collins, for example, discloses a system and method for performing this function. See figures 2, 4 and 5 as well as the Abstract and column 5, lines 19-27. Given the fact that using

interpolation to convert between video signals is well known, it would have been obvious to one of ordinary skill in the art to utilize the specific interpolation processes taught by Kanno for converting *video* signals in order to obtain the image quality advantages that reference teaches (by using learning image data, etc.) when converting a video signal. Note additionally that, although Kanno does not discuss video signals, the possibility of interpolating video data in the same way is not excluded since the mechanics of interpolating a single still-frame image such as in Kanno would not, in principle, be different from interpolating a single frame of a continuous stream of video data.

As to claim 25, Kanno teaches that the class data stored in memory corresponds to pixel data representing the second standard (i.e., higher resolution; see figure 2, h1-h3) and the means for generating generates pixel data representing the second image signal by providing the retrieved class data as pixel data representing pixel values. See column 4, lines 38-41.

Claims 18, and 32 recite generally similar limitations and are rejected on the same ground as applied to claim 25 above.

As to claim 26, Kanno teaches means for generating the class data (column 5, lines 9-19).

5. Claims 16, 20, 34 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) and Matsumura (US 5,148,499), and further in view of Tararine et al. (US 5,048,102).

As applied to claims 15, 19, 33 and 36 above, Kanno does not teach that the class data is coefficient data and the means for generating the second image data operates in accordance with the coefficient data. Kanno teaches data conversion using stored interpolated values which have already been computed. Tararine et al. teaches that these two methods are equivalents in the art (column 7, line 15 through column 8, line 7). It would have been obvious to one of ordinary skill in the art to replace the direct accessing of the interpolation data taught by Kanno et al. with a method that computes the interpolation data from weights or coefficients. Because Tararine et al teaches that these methods are equivalents, use of one or the other would have been an obvious and routine substitution dictated by constraints or requirements of a particular designer.

6. Claims 24, 28, 29, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868), Matsumura (US 5,148,499) and Collins (US 4,587,556) as applied to claim 23 above, and further in view of Tararine et al. (US 5,048,102).

Kanno does not teach that the class data is coefficient data and the means for generating the second image data operates in accordance with the coefficient data. Kanno teaches data conversion using stored interpolated values which have already been computed. Tararine et al. teaches that these two methods are equivalents in the art (column 7, line 15 through column 8, line 7). It would have been obvious to one of ordinary skill in the art to replace the direct accessing of the interpolation data taught by

Kanno et al. with a method that computes the interpolation data from weights or coefficients. Because Tararine et al teaches that these methods are equivalents, use of one or the other would have been an obvious and routine substitution dictated by constraints or requirements of a particular designer.

Claim 29 recites generally similar limitations and are rejected on the same ground as applied to claim 25 above.

#### ***Allowable Subject Matter***

7. Claims 1-14 are allowable over the prior art of record.

Reasons for indicating allowable subject matter were given in a previous office action, paper no. 4, and incorporated herein by reference.

#### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

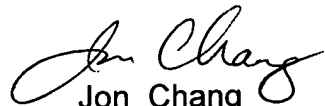
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon Chang whose telephone number is (703)305-8439. The examiner can normally be reached on M-Th 8:00 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

  
Jon Chang  
Primary Examiner  
Art Unit 2623

Jon Chang  
July 24, 2001